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<p>2001-017348/03 A13 J04 (A97 J01) BADI 1999.05.07          BASF AG *DE 19920944-A1          1999.05.07 1999-1020944(+1999DE-1020944) (2000.11.09) C08F          212/08, B01J 20/26, C08F 226/06  <b>Insoluble, only slightly swellable popcorn polymer, used e.g. as ion exchange or adsorber resin or filter aid, is obtained by polymerisation of styrene, N-vinyl-lactam or N-vinyl-amine and difunctional crosslinker</b>  <b>C2001-005005</b>          Addnl. Data: ERNST A, MEFFERT H, SANNER A, STEIN S, RUCHATZ F</p>	<p>A(4-B1B, 4-C4A, 4-D1) J(1-D1, 1-D4, 4-E4)   (5)</p> <p><b>USE</b>          Used as ion exchange resins, adsorber resins and filtration aids (claimed).</p> <p><b>ADVANTAGE</b>          Insoluble, only slightly swellable, chemically inert popcorn polymers with a large surface area, obtained in a largely solvent-free state by a simple, low-cost process with an acceptable reaction time.</p>
<p><b>NOVELTY</b>          Insoluble, only slightly swellable popcorn polymers contains (a) 50-99 wt% styrene and/or mono-unsaturated styrene derivative(s), (b) 0.1-40 wt% N-vinyl-lactam(s) or N-vinyl-amine(s) and (c) 0.1-10 wt% difunctional crosslinker(s).</p> <p><b>DETAILED DESCRIPTION</b>          An INDEPENDENT CLAIM is also included for a process for the production of these polymers by polymerisation of the above monomers in the absence of oxygen and polymerisation initiators.</p>	<p><b>EXAMPLE</b>          A mixture of 450 g water, 50 g N-vinylpyrrolidone, 1 g N,N'-divinylethylene-urea (DVEU) and 0.05 g sodium hydroxide was heated to 60°C under nitrogen, treated with a solution of 0.1 g sodium dithionite in 10 g water, heated at 80°C for 20 minutes, treated over 4 hours with a solution of 3 g DVEU in 150 g styrene, diluted over 2 hours with 1000 ml water and heated for a further 1 hour at 80°C. The viscous suspension was worked up by filtration, washing with water (to remove soluble polymer and monomers) and drying under vacuum, to give a popcorn polymer in a yield of 96%.</p> <p> DE 19920944-A+</p>

**TECHNOLOGY FOCUS**

Polymers - Preferred Composition: Polymers containing (a) 70-99 (preferably 75-97) wt% styrene, (b) 0.5-30 wt% N-vinylpyrrolidone (NVP), N-vinyl-piperidone, N-vinylcaprolactam, optionally methylated N-vinylimidazole and/or N-vinylformamide, preferably 1-25 wt% NVP, (c) 0.1-8 wt% N,N'-divinylethylene-urea (DVEU), N,N'-divinylpropylene-urea and/or divinylbenzene (DVB), preferably 0.2-5 wt% DVEU and/or DVB, and possibly (d) 0-20 wt% other radically polymerizable monomers. Preferred Process: Polymerisation is carried out at 20-200°C.  
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